

In The Claims

Please amend claims 7, 16, and 37 as follows below.

Please add new claims 40-48 as follows below.

The following is a complete set of claims as amended by this response.

1 1. (Previously Presented) A method of modifying a
2 SPICE netlist of a circuit design using a simulation
3 template to perform a pre-determined analysis involving
4 circuit parameter perturbations, comprising:
5 adding a first simulation routine to said SPICE netlist
6 to perform a reference simulation of said SPICE netlist to
7 arrive at nominal values for selected vector measurements;
8 adding a perturbing routine to said SPICE netlist for
9 altering circuit parameter values of said circuit design in
10 a pre-determined manner;
11 adding a second simulation routine to said SPICE
12 netlist for performing simulations of said circuit design
13 for respective altered circuit parameter values to arrive at
14 respective selected vector measurements; and
15 adding an analysis routine to said SPICE netlist for
16 manipulating at least one of said selected vector
17 measurements in accordance with said pre-determined
18 analysis.

1 2. (Previously Presented) The method of claim 1,
2 further including
3 adding tolerances in the SPICE netlist for said circuit
4 parameters.

1 3. (Previously Presented) The method of claim 1,
2 further including
3 removing parameter and vector save statements in said
4 SPICE netlist.

1 4-5. (Cancelled)

1 6. (Previously Presented) The method of claim 1,
2 wherein
3 said pre-determined analysis includes
4 a sensitivity analysis involving determining a
5 difference between said respective selected vector
6 measurements and said nominal values for said selected
7 vector measurements.

1 7. (Currently Amended) A [[The]] method of ~~claim 6~~
2 modifying a SPICE netlist of a circuit design using a
3 simulation template to perform a pre-determined analysis
4 involving circuit parameter perturbations, comprising:
5 adding a first simulation routine to said SPICE netlist
6 to perform a reference simulation of said SPICE netlist to
7 arrive at nominal values for selected vector measurements;
8 adding a perturbing routine to said SPICE netlist for
9 altering circuit parameter values of said circuit design in
10 a pre-determined manner;
11 adding a second simulation routine to said SPICE
12 netlist for performing simulations of said circuit design
13 for respective altered circuit parameter values to arrive at
14 respective selected vector measurements; and

15 adding an analysis routine to said SPICE netlist for
16 manipulating at least one of said selected vector
17 measurements in accordance with said pre-determined
18 analysis;
19 wherein said pre-determined analysis ~~further~~ includes
20 a sensitivity analysis involving determining a
21 difference between said respective selected vector
22 measurements and said nominal values for said selected
23 vector measurements, and
24 a root summed square analysis involving a sum of
25 the square of said difference between said respective
26 selected vector measurements and said nominal values
27 for said selected vector measurements.

1 8. (Previously Presented) The method of claim 6,
2 wherein
3 said pre-determined analysis further includes
4 an extreme value analysis involving a
5 determination of a maximum of said difference between
6 said respective selected vector measurements and said
7 nominal values for said selected vector measurements
8 when said circuit parameter values are at their extreme
9 tolerance values.

1 9. (Previously Presented) The method of claim 6,
2 wherein
3 said pre-determined analysis further includes
4 a worst case by sensitivity analysis involving a
5 maximum of an absolute value of said difference between

6 said respective selected vector measurements and said
7 nominal values for said selected vector measurements.

1 10. (Previously Presented) A computer readable medium
2 having stored therein a simulation template for modifying a
3 SPICE netlist of a circuit design to perform a pre-
4 determined analysis involving parameter perturbations,
5 comprising:

6 a routine to add to said SPICE netlist for performing a
7 reference simulation of said SPICE netlist to arrive at
8 nominal values for selected vector measurements;

9 a routine to add to said SPICE netlist for altering
10 circuit parameter values of said circuit design in a pre-
11 determined manner;

12 a routine to add to said SPICE netlist for performing
13 simulations of said circuit design for respective altered
14 circuit parameter values to arrive at respective selected
15 vector measurements; and

16 a routine to add to said SPICE netlist for manipulating
17 at least one of said selected vector measurements in
18 accordance with said pre-determined analysis.

1 11. (Previously Presented) The computer readable
2 medium of claim 10, wherein

3 said simulation template further includes
4 a command to add tolerances in the SPICE netlist
5 for said circuit parameters.

1 12. (Previously Presented) The computer readable
2 medium of claim 10, wherein
3 said simulation template further includes
4 a command to remove parameter and vector save
5 statements in said SPICE netlist.

1 13-14. (Cancelled)

1 15. (Previously Presented) The computer readable
2 medium of claim 10, wherein
3 said pre-determined analysis includes
4 a sensitivity analysis involving determining a
5 difference between said respective selected vector
6 measurements and said nominal values for said selected
7 vector measurements.

1 16. (Previously Presented) A [[The]] computer
2 readable medium ~~claim 15~~ having stored therein a simulation
3 template for modifying a SPICE netlist of a circuit design
4 to perform a pre-determined analysis involving parameter
5 perturbations, comprising:
6 a routine to add to said SPICE netlist for performing a
7 reference simulation of said SPICE netlist to arrive at
8 nominal values for selected vector measurements;
9 a routine to add to said SPICE netlist for altering
10 circuit parameter values of said circuit design in a pre-
11 determined manner;

12 a routine to add to said SPICE netlist for performing
13 simulations of said circuit design for respective altered
14 circuit parameter values to arrive at respective selected
15 vector measurements; and

16 a routine to add to said SPICE netlist for manipulating
17 at least one of said selected vector measurements in
18 accordance with said pre-determined analysis;

19 wherein said pre-determined analysis ~~further~~ includes

20 a sensitivity analysis involving determining a
21 difference between said respective selected vector
22 measurements and said nominal values for said selected
23 vector measurements, and

24 a root summed square analysis involving a sum of
25 the square of said difference between said respective
26 selected vector measurements and said nominal value for
27 said selected vector measurements.

1 17. (Previously Presented) The computer readable
2 medium of claim 15, wherein
3 said pre-determined analysis further includes
4 an extreme value analysis involving a
5 determination of a maximum of said difference between
6 said respective selected vector measurements and said
7 nominal values for said selected vector measurements
8 when said circuit parameter values are at their extreme
9 tolerance values.

1 18. (Previously Presented) The computer readable
2 medium of claim 15, wherein
3 said pre-determined analysis further includes
4 a worst case by sensitivity analysis involving a
5 maximum of an absolute value of said difference between
6 said respective selected vector measurements and said
7 nominal values for said selected vector measurements.

1 19. (Previously Presented) The method of claim 1,
2 wherein
3 said circuit parameter values of said circuit design
4 are one of resistance of a resistor, capacitance of a
5 capacitor, and inductance of an inductor.

1 20. (Previously Presented) The method of claim 1,
2 wherein
3 said at least one selected vector measurement is
4 voltage at a node of said circuit design.

1 21. (Previously Presented) The method of claim 1,
2 wherein
3 said at least one selected vector measurement is
4 current along a branch of said circuit design.

1 22. (Previously Presented) The method of claim 1,
2 wherein
3 said at least one selected vector measurement is power
4 dissipation in a component of said circuit design.

1 23. (Previously Presented) The method of claim 22,
2 wherein
3 said component of said circuit design is one of a
4 resistor, a capacitor, and an inductor.

1 24. (Previously Presented) The method of claim 1,
2 wherein
3 only one circuit parameter value of said circuit design
4 is altered at a time by the perturbing routine.

1 25. (Previously Presented) The computer readable
2 medium of claim 10, wherein
3 said circuit parameter values of said circuit design
4 are one of resistance of a resistor, capacitance of a
5 capacitor, and inductance of an inductor.

1 26. (Previously Presented) The computer readable
2 medium of claim 10, wherein
3 said at least one selected vector measurement is
4 voltage at a node of said circuit design.

1 27. (Previously Presented) The computer readable
2 medium of claim 10, wherein
3 said at least one selected vector measurement is
4 current along a branch of said circuit design.

1 28. (Previously Presented) The computer readable
2 medium of claim 10, wherein
3 said at least one selected vector measurement is power
4 dissipation in a component of said circuit design.

1 29. (Previously Presented) The computer readable
2 medium of claim 28, wherein
3 said component of said circuit design is one of a
4 resistor, a capacitor, and an inductor.

1 30. (Previously Presented) The computer readable
2 medium of claim 10, wherein
3 only one circuit parameter value of said circuit design
4 is altered at a time by the perturbing routine.

1 31. (Previously Presented) A method of analyzing a
2 SPICE netlist of a circuit design, the method comprising:
3 (a) providing a SPICE netlist of a circuit design;
4 (b) selecting a selected vector measurement of the
5 circuit design;
6 (c) simulating the SPICE netlist of the circuit design
7 using nominal circuit parameter values to determine a
8 nominal vector measurement associated with the selected
9 vector measurement;
10 (d) altering at least one circuit parameter value of a
11 component in the SPICE netlist in a pre-determined manner to
12 generate at least one altered circuit parameter value;
13 (e) simulating the SPICE netlist of the circuit design
14 with the at least one altered circuit parameter value to
15 determine an altered vector measurement associated with the
16 selected vector measurement;
17 (f) repeating steps (d) and (e) with the at least one
18 circuit parameter value to generate a plurality of altered

19 circuit parameter values and to determine a plurality of
20 altered vector measurements of the circuit design; and
21 (g) determining a difference between the plurality of
22 altered vector measurements and the nominal vector
23 measurement to generate a sensitivity in the vector
24 measurement of the circuit design in response to alterations
25 in the at least one circuit parameter value of the component
26 in the SPICE netlist.

1 32. (Previously Presented) The method of claim 31,
2 wherein
3 a simulation template is used to perform steps (b)-(g).

1 33. (Previously Presented) The method of claim 31,
2 wherein
3 the at least one circuit parameter value of the
4 component in the SPICE netlist is altered within a tolerance
5 of the component.

1 34. (Previously Presented) The method of claim 31,
2 wherein
3 the at least one circuit parameter value of a component
4 is one of resistance of a resistor, capacitance of a
5 capacitor, and inductance of an inductor.

1 35. (Previously Presented) The method of claim 31,
2 wherein
3 the vector measurement of the circuit design is one of
4 voltage at a node, current along a branch, and power
5 dissipation in the component.

1 36. (Previously Presented) The method of claim 31,
2 wherein
3 only one circuit parameter value of said circuit design
4 is altered at a time.

1 37. (Currently Amended) A [[The]] method of claim 31,
2 further analyzing a SPICE netlist of a circuit design, the
3 method comprising:
4 (a) providing a SPICE netlist of a circuit design;
5 (b) selecting a selected vector measurement of the
6 circuit design;
7 (c) simulating the SPICE netlist of the circuit design
8 using nominal circuit parameter values to determine a
9 nominal vector measurement associated with the selected
10 vector measurement;
11 (d) altering at least one circuit parameter value of a
12 component in the SPICE netlist in a pre-determined manner to
13 generate at least one altered circuit parameter value;
14 (e) simulating the SPICE netlist of the circuit design
15 with the at least one altered circuit parameter value to
16 determine an altered vector measurement associated with the
17 selected vector measurement;
18 (f) repeating steps (d) and (e) with the at least one
19 circuit parameter value to generate a plurality of altered
20 circuit parameter values and to determine a plurality of
21 altered vector measurements of the circuit design;
22 (g) determining a difference between the plurality of
23 altered vector measurements and the nominal vector
24 measurement to generate a sensitivity in the vector

25 measurement of the circuit design in response to alterations
26 in the at least one circuit parameter value of the component
27 in the SPICE netlist; and

28 (h) determining a sum of the differences between the
29 plurality of altered vector measurements and the nominal
30 vector measurement, squaring the sum of the differences, and
31 taking the square root of the squared sum of the differences
32 to determine a root summed square (RSS) for the vector
33 measurement of the circuit design in response to alterations
34 in the at least one circuit parameter value of the component
35 in the SPICE netlist.

1 38. (Previously Presented) The method of claim 31,
2 wherein

3 the at least one circuit parameter value is altered to
4 a maximum value and the SPICE netlist of the circuit design
5 is simulated to determine a first altered vector
6 measurement, and

7 the at least one circuit parameter value is altered to
8 a minimum value and the SPICE netlist of the circuit design
9 is simulated to determine a second altered vector
10 measurement,

11 and the method further comprises

12 determining a maximum of a first absolute value of
13 the first altered vector measurement less the nominal
14 vector measurement and a second absolute value of the
15 second altered vector measurement less the nominal
16 vector measurement to determine an extreme value
17 analysis (EVA) for the vector measurement of the
18 circuit design.

1 39. (Previously Presented) The method of claim 31,
2 further comprising:
3 determining scalar differences between the plurality of
4 altered vector measurements and the nominal vector
5 measurement,
6 taking the absolute value of the scalar differences to
7 generate absolute scalar differences,
8 determining a maximum value of the absolute scalar
9 differences to determine a worst case by sensitivity (WCS)
10 for the selected vector measurement of the circuit design.

1 40. (New) The method of claim 1, wherein
2 said circuit parameter value of said circuit design is
3 one of impedance, admittance, gain, and trans-impedance of
4 an electronic component.

1 41. (New) The method of claim 40, wherein
2 said electronic component is an active electronic
3 component.

1 42. (New) The method of claim 40, wherein
2 said electronic component is a passive electronic
3 component.

1 43. (New) The computer readable medium of claim 10,
2 wherein
3 said circuit parameter value of said circuit design is
4 one of impedance, admittance, gain, and trans-impedance of
5 an electronic component.

1 44. (New) The computer readable medium of claim 43,
2 wherein
3 said electronic component is an active electronic
4 component.

1 45. (New) The computer readable medium of claim 43,
2 wherein
3 said electronic component is a passive electronic
4 component.

1 46. (New) The method of claim 31, wherein
2 the at least one circuit parameter value of a component
3 is one of impedance, admittance, gain, and trans-impedance
4 of an electronic component.

1 47. (New) The method of claim 46, wherein
2 the electronic component is an active electronic
3 component.

1 48. (New) The method of claim 46, wherein
2 the electronic component is a passive electronic
3 component.